



Cataract Theatre Skills

Module 3 Phacoemulsification

Welcome to Phacoemulsification



- ◉ Warren Howell
- ◉ Trainer & Sales in Ophthalmology for 20 Years
- ◉ Please ask questions!
- ◉ Email

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Today we will learn



- ◉ Phaco Emulsification
- ◉ Venturi and Peristaltic Systems
- ◉ Handpieces & Tips
- ◉ Phaco Systems
- ◉ Additional Items
- ◉ Calibration

Phacoemulsification Surgery



Invented by Dr Charles Kelman in 1967

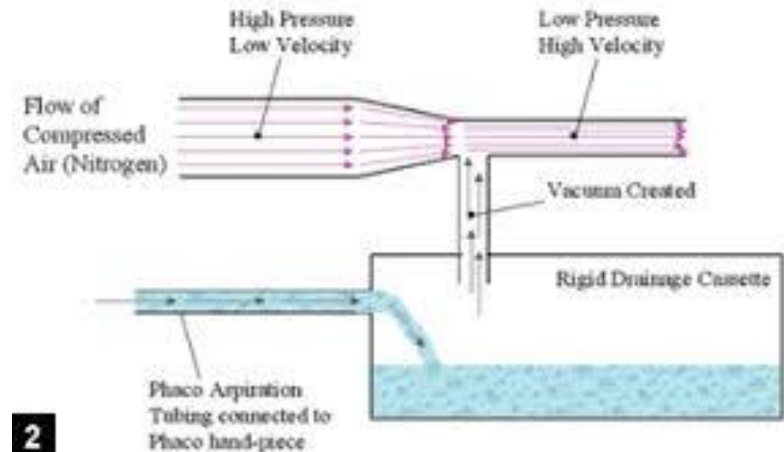
- Ultrasonic Handpiece is used to sculpt, break up & remove the cataract (Ave 40,000 vibrations per second)
- Two main methods Peristaltic (flow) or Venturi. Some systems now have both options
- Most Surgeons can use either method
- Phaco has enabled the Surgeons to remove Cataracts in 15-20 minutes (on average) and increased the amount of patients operated on



Venturi Phaco



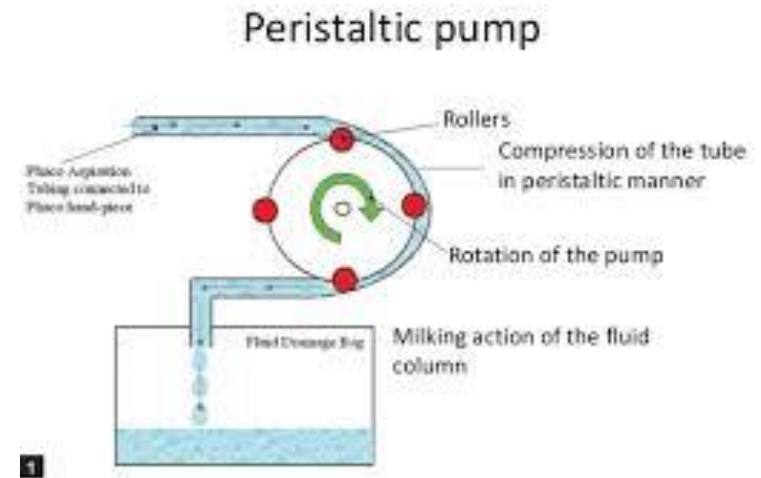
- A Vacuum is created by a Venturi Pump System (see Diagram)
- System is vacuum based
- Vacuum is always on
- Flow varies with vacuum = Vacuum up Flow goes up
- Fast and Efficient System
- Increased risk of capsule rupture
- Vacuum created instantly



Peristaltic Phaco



- ⦿ A Flow based system –driven by a pump
- ⦿ Flow based peristaltic rotary pump
- ⦿ Vacuum, Flow and Rise Time are separate
- ⦿ Flow is constant until tip occludes
- ⦿ Slightly less efficient
- ⦿ Slightly safer - less risk of capsule rupture
- ⦿ Vacuum only increases with tip occlusion



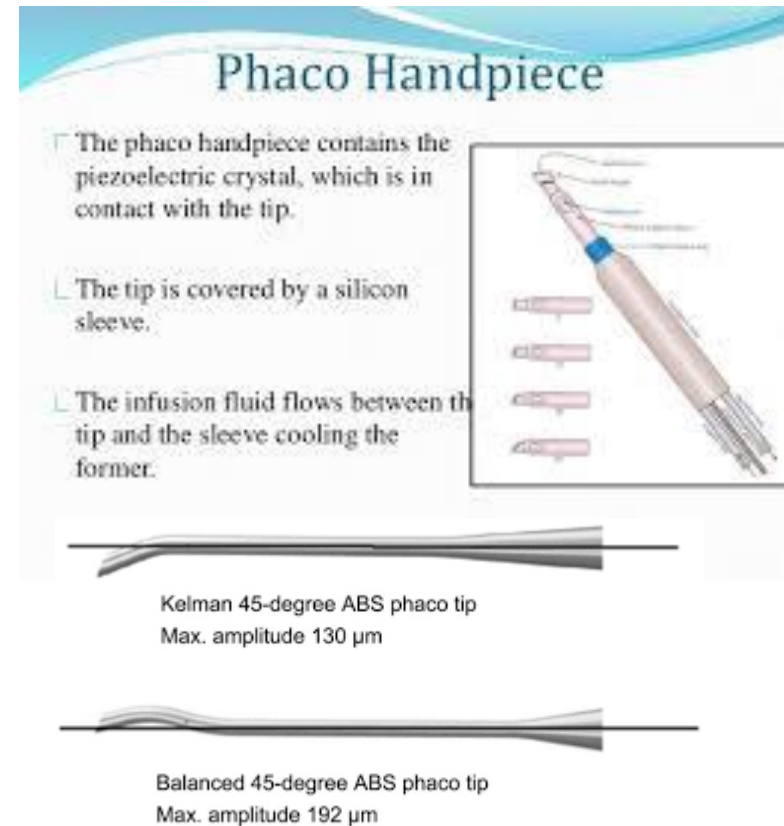
Question Time



Phaco Handpiece & Tips



- All Phacoemulsification Systems have a similar type of ultrasonic handpiece
- Piezoelectric Crystals generate the ultrasound power - 40-43kHz
- Historically Phaco Tips were either straight (30,45 degree tip) or Kelman
- Torsional (Ozil) Phaco 36 kHz uses a Kelman or Balanced Tip
- Some Phaco systems use Dual/Linear footpedals
- Pulse & Burst modes were added to systems in the 2000's
- All Surgeons that you work with will more than likely have used most of the main Phacoemulsification Systems in the market
- So will be familiar with Venturi & Peristaltic methods of Phaco



Phacoemulsification Systems



- Top Four Phaco Systems Companies
- Alcon – Centurion & Constellation
- Bausch & Lomb Stellaris Elite
- J&J (AMO) Whitestar Signature PRO
- DORC – EVA



Question Time



Items required to run the Phaco System?



- ⦿ The relevant sterile Phaco - Irrigation Aspiration tubing set (?could be in a custom pack)
- ⦿ Bottle - Plastic or Bag of Balanced Salt Solution
- ⦿ The Surgeons preferred Phaco Tip with cover & Phaco Test Chamber (Condom)
- ⦿ In a custom pack ?
- ⦿ Gallipot (? in a custom pack)
- ⦿ Anterior Vitrectomy Pack



Phaco System Calibration



- Prior to the cataract surgery - You and the Circulating Nurse will be required to set up the Phaco System
- The set up procedure will be as per the relevant manufacturers official training program
- Most Phaco Systems have a guide (see diagram)
- If the system does not pass the calibration - follow your departments SOP - EG Loose Tip Leak in calibration cover (Condom) etc
- Once the phaco handpiece & tip are calibrated, the system is ready for the surgery



Other items that should be prepared as back up



- ⦿ Floppy Iris - Iris Hooks or Pupil Expanders
- ⦿ Weak zonules - Capsular Tension Rings
- ⦿ Specialist Viscoelastics or HPMC
- ⦿ Sutures
- ⦿ Sulcus IOL



Question Time



Today we have learnt



- ◉ Explanation of Phaco Emulsification
- ◉ Venturi and Peristaltic Systems
- ◉ Handpieces & Tips
- ◉ Phaco Systems
- ◉ Additional Items
- ◉ Calibration

Thank-you



- ◉ We hope this session was useful
- ◉ Please send us your questions
- ◉ warren@medsalesacademy.co.uk
- ◉ See you on the next module
 - **Instruments Trolley**